



Exclusive DIVERTCO-DAMPER  
(diverting cone allows easy air exit—  
damper assures a positive seal  
against winter heat loss)



**AIR - Exhaust, Recirculation and Supply Systems**

**Genie-Air**

**PRODUCTS**

**INDUSTRIAL VENTILATORS**

**A Div. of N. T. W. Corporation**

3001 E. 11th Street / Los Angeles 23, Calif. / AN 9-7341



# GENIE-AIR Model PRE

(Patent Pending)

## POWER ROOF EXHAUSTER

### GENIE-AIR Power Roof Exhausters provide the following ADVANTAGES:

1. Exclusive DIVERTCO-DAMPER (diverting cone allows easy air exit—damper assures positive seal against winter heat loss).
2. Metal-spun WEATHER DOME protects against variable weather conditions.
3. LOW-SILHOUETTE DESIGN with minimum height for normal installations—however, height may be increased to meet climatic conditions.
4. RUGGED AND COMPACT CONSTRUCTION—manufactured of finest heavy-gauge metal for durability and finished to withstand severe weather conditions.
5. SIMPLE INSTALLATION together with LOW INITIAL and OPERATING COSTS make the use of GENIE-AIR the most efficient and economical method of ventilation control.
6. SIZED FOR EASY CONVERSION—your gravity, obsolete or decrepit power ventilators can be converted to GENIE-AIRS at a minimum installation cost.
7. NO EXTRAS TO BUY—one price includes unit complete with Weather-Dome, Divertco-Damper and Type A roof jack.

### CONSTRUCTION FEATURES:

1. Metal-spun weather dome assures positive coverage of the entire exhaust opening.
2. Dome support and damper guide rods are neoprene covered. This eliminates metal-to-metal contact and permits quiet operation of the damper.
3. Unique DIVERTCO-DAMPER (open in figure A, closed in figure B) is fully automatic in operation. At the start of operation of the unit, the Divertco-Damper rides up on the column of air and seats itself against the underside of the weather dome, thus diverting the vertical movement of air radially and exhausting around the circumference of the unit. Back pressure, which would otherwise impede the flow of air and reduce efficiency, is eliminated. When the unit is turned off, the DIVERTCO-DAMPER automatically closes.
4. A positive weather seal around the circumference of the flared portion of the fan section acts as a cushioned rest for the DIVERTCO-DAMPER when in closed position and assures positive seal against winter heat loss.
5. Pressure type fan blades deliver air in accordance with fan code measurements. Minimum clearance between cylinder and blade tips prevents loss of pressure.
6. All units are powered by motors conforming to NEMA standards, supplied by nationally recognized manufacturers. Two-speed and explosion proof motors are available for specific requirements.
7. Type "A" roof jack bases are furnished with all units, unless otherwise specified.

### GUARANTEE

GENIE-AIR PRODUCTS are guaranteed to be free from defects in workmanship and materials under normal use and service for a period of one year from date of shipment to original purchaser. Defective parts will be replaced or repaired F.O.B. our Los Angeles plant, free of charge.



Figure A

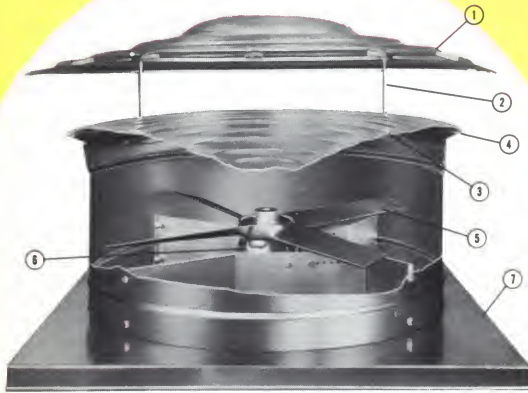


Figure B

### PERFORMANCE DATA for Model PRE

PRE No.	CFM	FAN RPM	DRIVE	HP	PHASE	VOLTAGE
9-2	280	1500	DD	1/20	1	115
11-4	470	1500	DD	1/20	1	115
13-7	780	1500	DD	1/30	1	115
15-14	1400	1000	DD	1/15	1	115
17-22	2200	1000	DD	1/15	1	115
19-30	3000	1140	DD	1/4	1*	115*
21-38	3850	1140	DD	1/4	1*	115*
25-48	4800	1140	DD	1/4	1*	115*
31-60	6000	600	BD	1/3	1*	115*
31-75	7500	750	BD	1/2	1*	115*
31-10	10000	1140	DD	3/4	3	220/440
37-9	9000	430	BD	1/2	1*	115*
37-12	12500	560	BD	3/4	3	220/440
37-14	14000	1140	DD	1	3	220/440
37-16	16800	1140	DD	1 1/2	3	220/440
43-20	20000	800	BD	1 1/2	3	220/440
43-23	23000	1140	DD	2	3	220/440
49-25	25000	1140	DD	3	3	220/440
49-30	30000	870	BD	3	3	220/440

\*Also available in 230V — 1°, 220V — 3°, or 440V — 3°. Special combination of fan blades, motor sizes and speeds are available to meet other requirements. The manufacturer reserves the right to change material and design specifications at any time without notice. Larger capacities available on special order.



# GENIE-AIR Model ER

## DUAL EXHAUSTER-RECIRCULATOR

Patent No. 2700331

### with Automatic Change of Cycle for YEAR-ROUND CONTROLLED VENTILATION

**EXHAUSTS IN SUMMER** Designed for installation through the roof of industrial type buildings, Model ER is a power driven roof ventilator which provides both exhaust and recirculation of air within the building.

During the exhaust cycle the circulating fan blows the air upward through the sleeve section. The force of the air lifts the DIVERTCO-DAMPER and allows the air to be exhausted into the atmosphere. The greater portion of the air is drawn through the circular openings of the diffuser, but an additional amount near the roofline is also exhausted by venturi action. The inwardly tapered or constricted portion of the fan section, called the jet, exhausts an additional amount of air nearer the roof through the space between sleeve and fan sections.

### RECIRCULATES IN WINTER

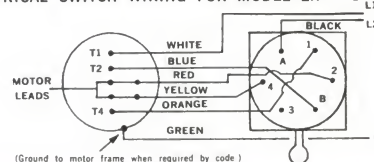
During the winter, maximum efficiency for the heating system of your building is obtained through recirculation by GENIE-AIR. Heat trapped near the roof is recovered and returned to the occupied areas. This movement of air keeps temperatures more uniform at all levels, improving the efficiency of the heating system and reducing both initial and operating costs. The change in operating cycle is accomplished by changing the direction of motor rotation, causing the fan blades to reverse and move the air column down through the fan section, out the diffuser openings. Operation is controlled by a 3-position reversing switch.

During the recirculation cycle the DIVERTCO-DAMPER remains closed by gravity and negative pressure as air is supplied to the fan through the opening formed by the axial spacing of the fan section below the sleeve section.

### NOTE:

As the percentage of CFM delivery is reduced when fan blade rotation is reversed, please specify on which cycle of operation the greater CFM is required when selecting Model ER. Unless otherwise requested, the greater CFM delivery is obtained on the exhaust cycle.

### ELECTRICAL SWITCH WIRING FOR MODEL ER — 1<sup>st</sup> ONLY



(Ground to motor frame when required by code.)

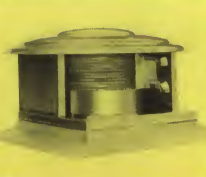
Furnas reversing controller #A14-2X303 or equal — capacity 1 HP

When current is available,  
order 3 phase motors, requiring  
only 3 wires for reversing

### ACCESSORIES AVAILABLE for Model ER



Motor operated circular louvers, which may also be set manually, for introducing controlled amounts of fresh air are available for use with this unit. Fresh air may also be supplied by adjusting the DIVERTCO-DAMPER manually.

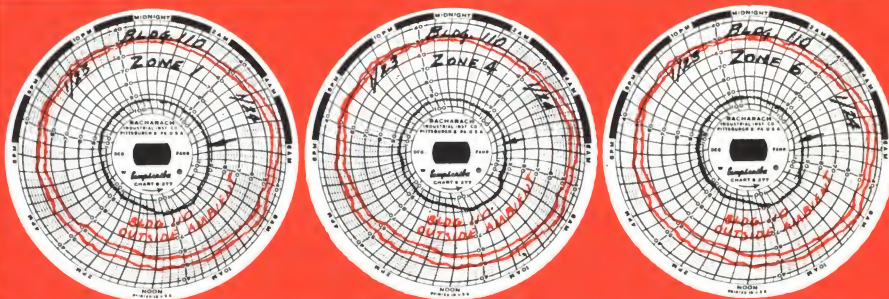


Coil and filter section for hot water, chilled water or direct-expansion coils are available on special order for use in conjunction with large size Model ER units.



Filters and frames are available for use with Model ER.

At the completion of this North American installation, temperature tests were recorded. The three recording charts reflect the even temperature maintained at three different locations within the building, while the graph marking overprinted in red on each of the three charts indicates the temperature outside the building recorded at the same time.



In this North American Aviation, Inc., building, which is 630' x 300' x 35' high, specifications called for a 40° temperature differential during the winter heating cycle and a 15 minute air change during the summer exhaust cycle. Genie-Airs, Model ER (dual Exhauster-Recirculators), were used in conjunction with gas-fired suspended heaters to meet these requirements. The number of heaters normally required was reduced by 1/2 due to the feature of the recirculating cycle of the Genie-Air. In this particular building, all Genie-Airs and heaters are operated under thermostatic control during both winter and summer.



# GENIE-AIR Model S SUPPLIER



## CONSTRUCTION FEATURES

GENIE-AIRS are designed for installation on new or old construction, or replacement of existing ventilators. In most cases, your gravity, obsolete, or decrepit ventilators can be replaced without disturbing your present roof openings. Genie-Airs have been designed in odd cylinder sizes so that they may be slipped through existing roof openings without alterations. Genie-Airs provide low maintenance costs and the greatest movement in air volume in relation to motor horsepower.

The new DIVERTCO-DAMPER supersedes former designs and overcomes the "hanging-up," "binding," "sticking" and other faults of butterfly dampers, aluminum-hinged shutter dampers, and manually-operated chain dampers. With the new DIVERTCO-DAMPER everything is automatic—no electrical control required!

**SEALED BALL BEARINGS**—All belt drive units have shaft bearings which are self-aligning, mounted in unbreakable, malleable housings and lifetime lubricated.

**V-BELT DRIVES**—All V-belt pulleys are of cast iron, precision machined, with taper lock bushing on impeller shaft and variable-pitch keyed sheave on motor. Belts are of grease resistant heavy cord construction. Steel shafts have been accurately turned, ground and polished.

**FAN BLADES** are of nationally recognized manufacture, pressure type, with air de-

liveries measured in accordance with fan codes. CFM deliveries of all GENIE-AIR units have been calculated on the basis of the static pressure through the unit. Fan blade selection is based on the specific requirements of each individual installation.

**ADJUSTABLE AIR DELIVERY**—By adjusting the variable pitch motor sheave the impeller RPM and the CFM of air delivered can be varied in belt driven units. Air deliveries given in the performance tables have been taken at normal RPM and can be increased or decreased to meet your particular requirements.

**MOTORS** conform to NEMA standards and are of nationally recognized manufacture. They are designed for vertical operation, and are quiet in operation. Other electrical characteristics, including two-speed and explosion-proof motors, are available for specific requirements. Motors bear the manufacturer's usual one-year guarantee and require minimum maintenance.

GENIE-AIR SUPPLIER, Model S, is used for make-up air or for supplying air in structures where the windows and doors are either of insufficient size or number to permit adequate ventilation. For best results, we recommend that supply units be used in conjunction with exhaust units, GENIE-AIR Model PRE, to assure complete air circulation. In most cases, it is suggested that the supply units be located around the outside perimeter of the building or area to be ventilated and the exhaust units be located in the center. Additional information on this type of installation is available through our engineering department.

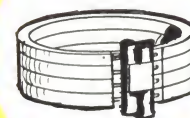
On special order only, this model can be used as either a supplier or an exhauster by simple positioning of the operating switch. This allows all units, or any combination of units, to be operated on either cycle—depending upon the building's particular requirements.

When this unit is turned off, it functions as a gravity ventilator. However, to prevent heat loss in winter, the stationary diverting cone may be manually closed if desired.

## ACCESSORIES AVAILABLE for Model S



Bird screens, for normal functioning of the unit where birds are a nuisance.



Coil and filter section for hot water, chilled water and direct-expansion coils available on special order for use in conjunction with large size Model S units.



Filters and frames are available for filtering incoming air.

Dimension B (sleeve length extending under the roof), as shown in the Dimensional Data Chart, may be lengthened to meet particular requirements.

Sleeve length above roof may also be increased for greater height. In this case, motor and fan are located above the roof.

## PERFORMANCE DATA for models ER and S

MODEL ER	MODEL S	CFM	FAN RPM	DRIVE	HP	PHASE	VOLTAGE	MODEL ER	MODEL S	CFM	FAN RPM	DRIVE	HP	PHASE	VOLTAGE
	S9-2	280	1500	DD	1/70	1	115	ER31-75	S31-75	7500	750	BD	1/2	1*	115*
	S11-4	470	1500	DD	1/70	1	115	ER31-10	S31-10	10000	1140	DD	3/4	3	220/440
	S13-7	780	1500	DD	1/30	1	115	ER37-9	S37-9	9000	430	BD	1/2	1*	115*
	S15-14	1400	1000	DD	1/15	1	115	ER37-12	S37-12	12500	560	BD	3/4	3	220/440
	S17-22	2200	1000	DD	1/15	1	115	ER37-14	S37-14	14000	1140	DD	1	3	220/440
ER19-30	S19-30	3000	1140	DD	1/4	1*	115*	ER37-16	S37-16	16800	1140	DD	1 1/2	3	220/440
ER21-38	S21-38	3850	1140	DD	1/4	1*	115*	ER43-20	S43-20	20000	800	BD	1 1/2	3	220/440
ER25-48	S25-48	4800	1140	DD	1/4	1*	115*	ER43-23	S43-23	23000	1140	DD	2	3	220/440
ER31-60	S31-60	6000	600	BD	1/3	1*	115*	Larger sizes and capacities available on special order.							

\*Also available in 230V—1°, 220V—3°, or 440V—3°

Special combinations of fan blades, motor sizes and speeds are available to meet other requirements.

The manufacturer reserves the right to change material and design specifications at any time without notice.



It is suggested that Table 1 be referred to as a guide when selecting any GENIE-AIR Model which is to perform more than one function. This table aids in selecting the proper size unit to avoid high terminal velocities when either supply or recirculating cycle is in operation. When selecting straight Power Roof Exhausters, roof height is not an essential factor; however, a more uniform displacement of air will be obtained if a greater number of small units are used.

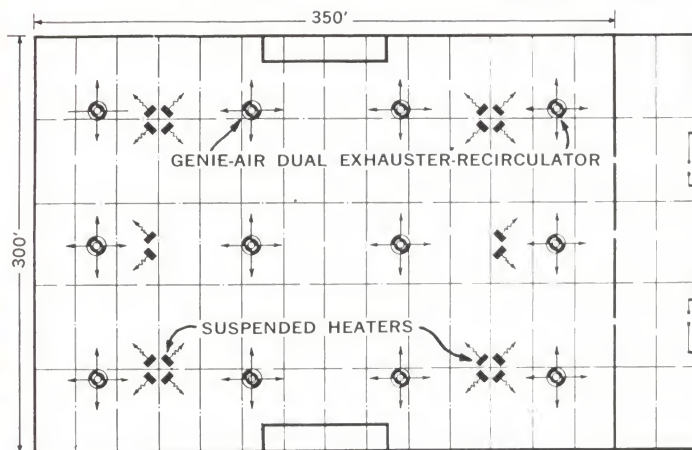
With these factors in mind the following procedure is recommended:

1. SECURE AN APPROXIMATE FIGURE AS TO THE VOLUME OF AIR THE BUILDING CONTAINS by multiplying the length of the building by its width and its average height. (In cases of pitched roofs the average height is obtained by adding the height from floor line to eaves plus one-half vertical distance from eaves to highest peak.)
2. DETERMINE THE NUMBER OF MINUTES PER AIR CHANGE REQUIRED for proper ventilation. (See table 2 or any other recommended air-change table.)

3. OBTAIN TOTAL CFM (Cubic Feet per Minute) REQUIRED TO MEET THE NUMBER OF MINUTES PER AIR CHANGE SELECTED by dividing the cubical contents of the building (as obtained in Step 1) by the number of minutes per air change (as obtained in Step 2.)
4. SELECT SIZE OF UNIT RECOMMENDED FROM TABLE 1. (except Power Roof Exhausters.)
5. OBTAIN THE CFM RATING OF UNIT TO BE USED (as obtained in Step 4) FROM PERFORMANCE DATA TABLE.
6. DETERMINE THE NUMBER OF UNITS TO BE USED by dividing the total CFM (as obtained in Step 3) by the CFM rating of the unit size (as obtained in Step 5.)
7. SPACING OF UNITS within a building is an important factor for uniform distribution of supply or recirculated air. Two or three rows of ventilators, depending upon building width, will give a better distribution of air than one row down the center; i.e., in a building 100' wide requiring 8 — 21" units, use two rows of four each; in a building 150' wide requiring 15 — 25" units, use three rows of five each.

## THE GENIE-AIR DUAL EXHAUSTER-RECIRCULATOR

- PROVIDES UNIFORM DISTRIBUTION OF HEATED AIR—
- RECOVERS HEATED AIR TRAPPED AT ROOF LINE—
- REDUCES NORMALLY REQUIRED HEAT INPUT 30% TO 50%—  
+ POWER EXHAUST FOR SUMMER VENTILATION!



A TYPICAL PLAN VIEW SHOWING GENIE-AIR DUAL EXHAUSTER-RECIRCULATOR UNITS IN CONJUNCTION WITH SUSPENDED HEATERS. SEE INSTRUCTIONS — "SELECTING THE GENIE-AIR" — TO DETERMINE SIZES AND QUANTITY.



SECTION SHOWING AIR MOVEMENT WITH GENIE-AIR OPERATING AS RECIRCULATOR DURING WINTER HEATING CYCLE.

Referring to the typical plan view shown above, the GENIE-AIR Model ER was selected to provide exhaust in summer and recirculation in winter. This building has adequate fresh air openings and is used for light parts fabrication. The number of units required was selected as follows:

1. Length of building 350 ft. (14 - 25' bays); width 300 ft. (5 - 60' bays); average height 25 ft.—for a 2,625,000 cu. ft. cubical contents.

2. Required: 15 minutes per air change (or 4 changes per hour).
3.  $2,625,000 \text{ cu. ft.} \div 15 = 175,000 \text{ CFM.}$
4. As building is over 22' high, 37" units are required.
5. No.  $37 - 14$  units are selected, each having 14,000 CFM capacity.
6.  $175,000 \div 14,000 = 12$  units required.
7. Due to building width, three rows of four ventilators each are selected to obtain better air distribution.

### TABLE I

(To be used with all models except Power Roof Exhausters)

Maximum Roof Height — To	14'	18'	20'	22'	26'	30'
Genie-Air Unit Size —	19	21	25	31	37	43

### TABLE II RECOMMENDED AIR CHANGES

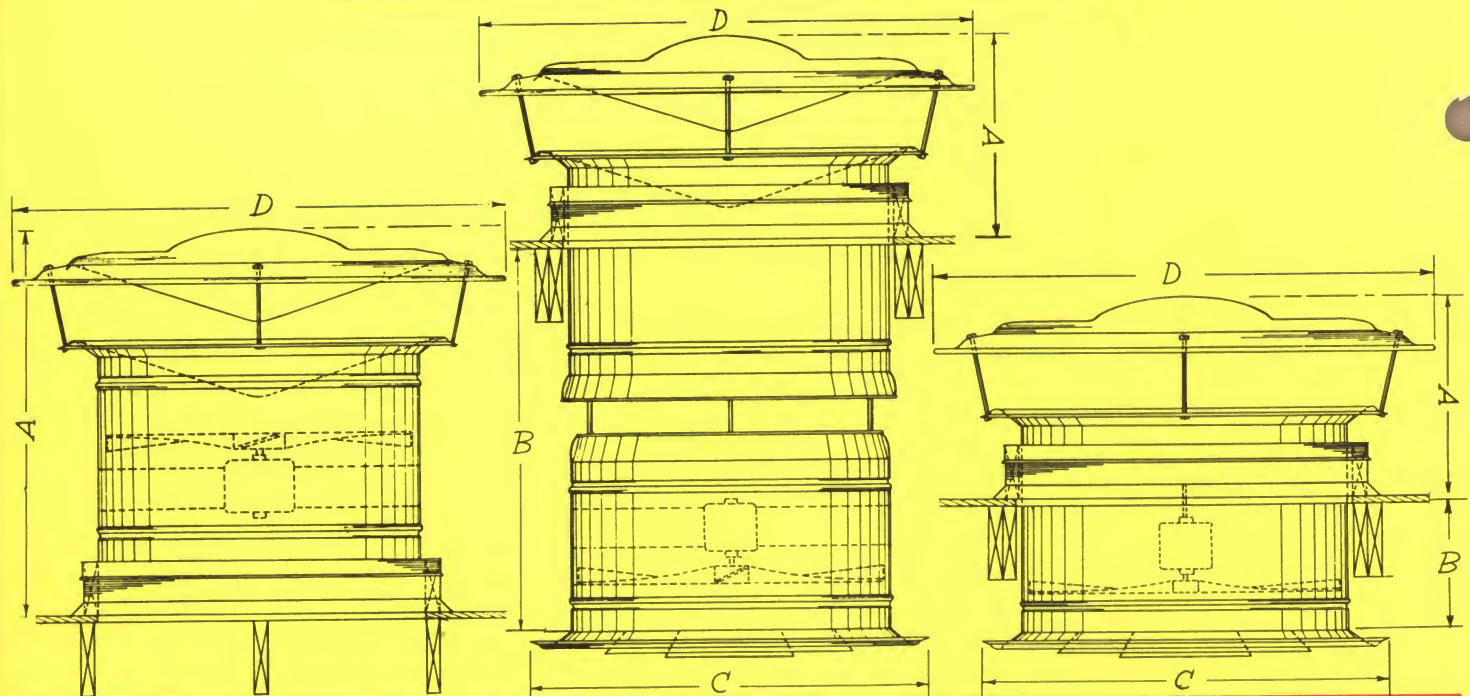
Space to be Ventilated	No. of Min. per Change	Suggested Models
Agricultural Barns	10-15	PRE - ER
Auditoriums	5-10	PRE - ER
Bakeries	2-3	PRE
Boiler Rooms	2-5	PRE
Bowling Alleys	3-6	PRE - S
Cafeterias	5-10	PRE
Dance Halls	2-5	PRE - S
Dry Cleaners	1-3	PRE
Engine Rooms	1-3	PRE
Foundries	2-5	PRE
Garages	5-10	PRE
Gymnasiums	5-10	PRE
Industrial—Light	10-15	PRE - ER - S
Industrial—Heavy	4-8	PRE - ER - S
Kitchens	1-3	PRE - S
Laundries	1-3	PRE
Machine Shops	3-5	PRE
Mills	5-8	PRE - S
Packing Houses	5-8	PRE - S
Warehouses	10-15	PRE - ER - S

## TYPICAL SPECIFICATIONS for GENIE-AIR

"Furnish and install where indicated on plans.  
Genie-Airs, Model # \_\_\_\_\_, complete with Divertco-Damper and circular Weather Dome as per specifications by Genie-Air Products, a division of N.T.W. Corporation, Los Angeles, Calif.



# DIMENSIONAL DATA



**MODEL PRE**

Size	D	A	Size	D	A
9	16	12	21	32	20
11	18	12	25	36	20
13	20	12	31	42	26
15	26	14	37	48	30
17	28	15	43	54	33
19	30	17	49	60	33

**MODEL ER**

Size	D	A	B	C
19	30	14	32	25
21	32	15	32	27
25	36	18	32	31
31	42	20	38	37
37	48	22	38	43
43	54	24	42	49

**MODEL S**

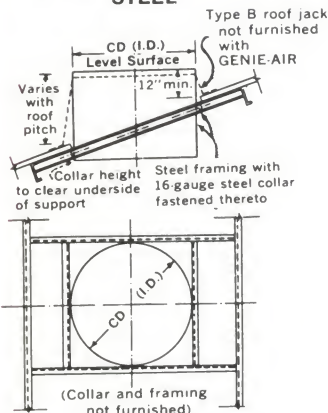
Size	D	A	B	C	Size	D	A	B	C
9	16	9	14	15	21	32	15	14	27
11	18	9	14	17	25	36	18	14	31
13	20	9	14	19	31	42	20	14	37
15	26	12	14	21	37	48	22	14	43
17	28	12	14	23	43	54	24	14	49
19	30	14	14	25					

(Approximate maximum dimensions in inches)

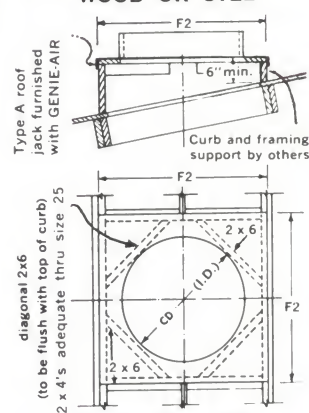
## SUGGESTED METHODS FOR FRAMING OR SUPPORT OF GENIE-AIR SIZES 31 thru 49



**STEEL**



**WOOD OR STEEL**



**CD DIMENSIONS**

Size 31 — 32 1/4"	Size 43 — 44 1/4"
Size 37 — 38 1/4"	Size 49 — 50 1/4"

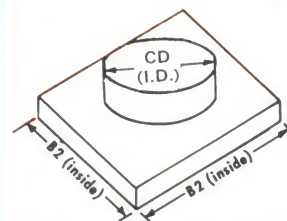
**Note:** CD dimension plus 3" must be held vertically clear downward through full length of equipment below the underside of roof only.

**NOTE:** On flat or slightly pitched roofs 16-gauge steel collar may be connected above roof decking with necessary support framing on underside of roof.

**NOTE:** On PRE model, cutting of the supporting rafter which runs through required opening and heading-in thereof is not necessary unless required by code.

**NOTE:** Conformance of installations with local agencies and governing codes is the responsibility of others.

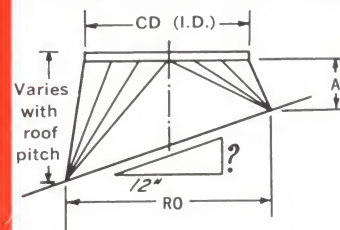
## ROOF JACK BASES



**Type A**

**B2 (Inside Dimensions)**  
For use with all models & all sizes

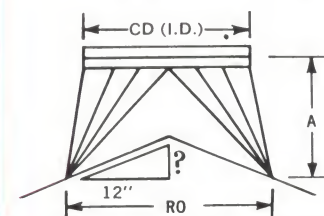
Size	CD	B2	Size	CD	B2
9	10	15	21	22	31
11	12	15	25	26	31
13	14	15	31	32 1/4	43
15	16	20 1/4	37	38 1/4	43
17	18	20 1/4	43	44 1/4	47 1/2
19	20	31	49	50 1/4	55



**Type B**

**I.D. (Inside Dimensions in inches)**  
For use with all models size 9 thru 25

Size	A	CD	RO
9	7	10	11x11
11	9	12	13x13
13	9	14	15x15
15	9	16	17x17
17	10	18	19x19
19	10	20	21x21
21	14	22	23x23
25	14	26	27x27



**Type C**

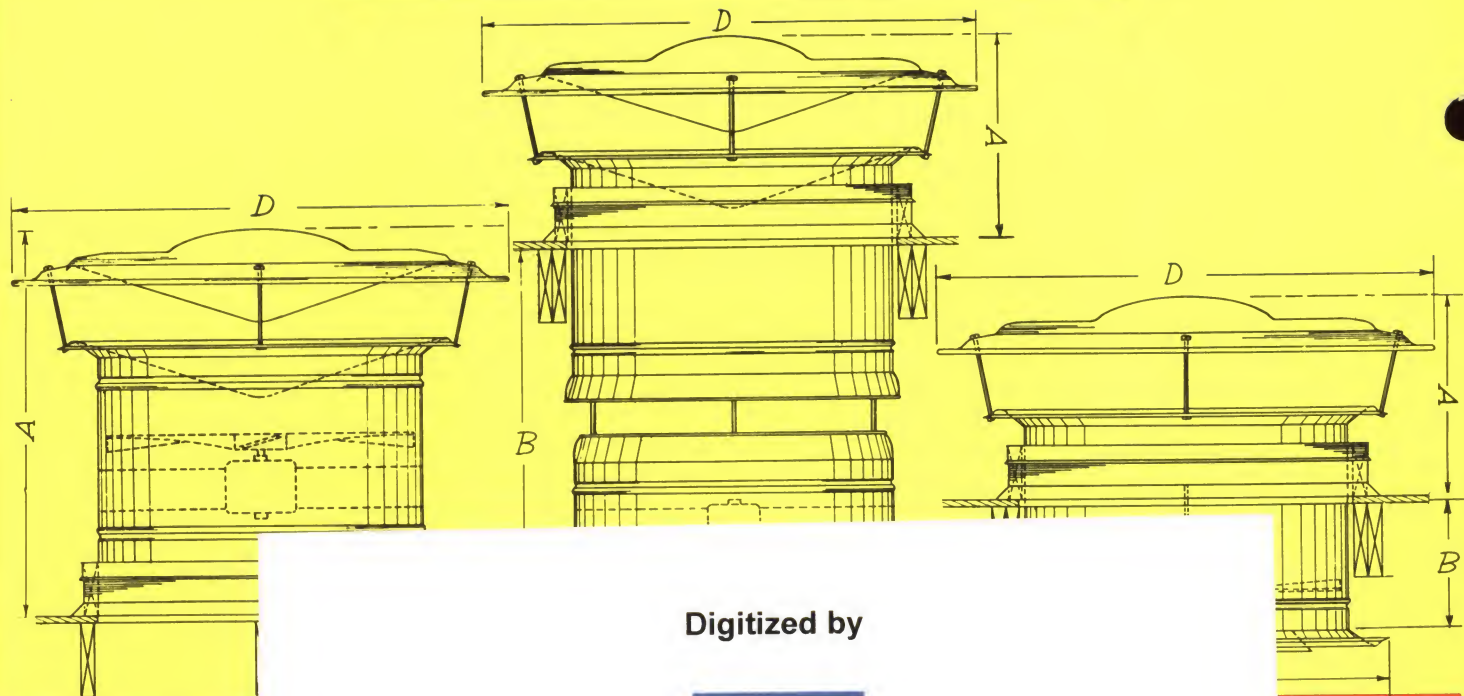
**I.D. (Inside Dimensions in inches)**  
For use with PRE models only  
size 9 thru 25

Size	A	CD	RO
9	7	10	11x11
11	9	12	13x13
13	9	14	15x15
15	9	16	17x17
17	10	18	19x19
19	10	20	21x21
21	14	22	23x23
25	14	26	27x27

**Genie-Air PRODUCTS**



# DIMENSIONAL DATA



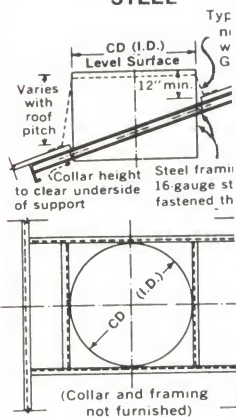
MODEL PRI

Size	D	A	Size
9	16	12	21
11	18	12	25
13	20	12	31
15	26	14	37
17	28	15	43
19	30	17	49

## SUGGESTED METHODS



## STEEL



## CD DIMENSIONS

Size 31 — 32 1/4"	Size 43
Size 37 — 38 1/4"	Size 49

**Note:** CD dimension plus 3" mu vertically clear downward thr length of equipment below the of roof only.

**NOTE:** On flat or slightly pitched roofs 16-gauge steel collar may be connected above roof decking with necessary support framing on underside of roof.

**NOTE:** On PRE model, cutting of the supporting rafter which runs through required opening and heading-in thereof is not necessary unless required by code.

**NOTE:** Conformance of installations with local agencies and governing codes is the responsibility of others.

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D	A	B	C
2	15	14	27
6	18	14	31
2	20	14	37
3	22	14	43
4	24	14	49

ns in inches)

Size	CD	B2
21	22	31
25	26	31
31	32 1/4	43
37	38 1/4	43
43	44 1/4	47 1/2
49	50 1/4	55

CD	RO
10	11x11
12	13x13
14	15x15
16	17x17
18	19x19
20	21x21
22	23x23
26	27x27

CD	RO
10	11x11
12	13x13
14	15x15
16	17x17
18	19x19
20	21x21
22	23x23
26	27x27